



## Crew Sends Christmas Messages

Although astronauts Gerry Carr, Ed Gibson and Bill Pogue spent Christmas Day in space, theirs was a merry holiday season.

The crew sent messages to Earth on Christmas Eve.

"Some words come and go and return again and others never leave us," Carr stated, "Words that come from the future like death, love, hope and peace shove us into tomorrow. Words of the past from ancient poets conjure up images like 'wonderful counselor,' 'Mighty God,' 'Prince of Peace,' 'spirit of wisdom and understanding'."

"You know, our Earth seems large to us as we look down on it, yet those men who have flown Apollo to the Moon say its small. And as we see it, there are vast areas of desolation and great masses of water with man crowded only into the more hospitable zones of the Earth. Yet the men from Apollo perceive the Earth as a tiny blue island in the vast sea of space."

"Either way you look at it, the observation is humbling because the tenuousness of our existence is emphasized by the need for man to get into harmony with his environment and with his fellow man."

"One of Man's principal goals for the future should be to learn to live in peace and harmony with one another. To that end, I wish for all the world a most fruitful and peaceful day."

Science Pilot Gibson said that he had been given two Christmas gifts that were priceless: understanding and co-operation.

"I think that if all the people in the world would look at the world as we have been privileged to do, they would find it smaller and that what we must do is understand one another and co-operate. I think those would be the best Christmas gifts we could ever give to one another."

Pilot Bill Pogue added, "It's this season of the year that we sort of pause, reflect and think that we can extend to other people kindness, brotherhood, consideration and even love. I think that it was during this period of time approximately 2000 years ago, that the theme was peace on Earth, good will toward men."

The crew made a Christmas tree from food cans and placed it in front of the food lockers in the

Skylab workshop. They found another tree on board the space station which was made by the Crew Systems Division at JSC and secretly packed aboard the command module before liftoff. The tree was made of fireproof Beta Cloth.

Gifts from the wives of the three crewmen were also hidden in the space station. When the astronauts were told where the gifts were, science pilot Gibson

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SKYLAB CHRISTMAS TREE—Pam Wheeler of PAO is shown holding a replica of the Christmas tree which the SL-4 astronauts found aboard their space station on Christmas Eve. The tree was 3 by 3 feet and made of Beta Cloth; green in color and trimmed with silver and gold ornaments. The tree was made by the Crew Systems Division at JSC and secretly packed aboard the command module before launch.

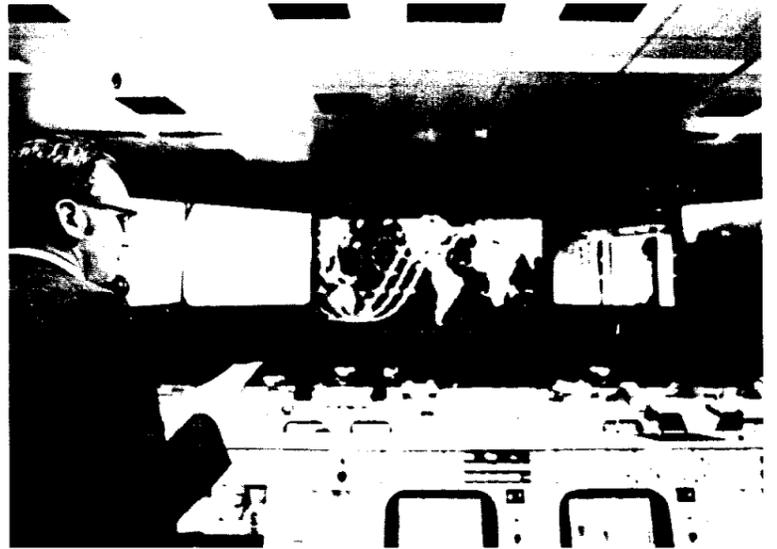
## JSC Energy Conservation Update

Car pools, lower thermostats, and a 33 per cent reduction in use of light fixtures are provid-

ing a sizeable reduction in energy usage at the NASA Johnson Space Center. As of this week, more than 1,570 car pools were operating at JSC—resulting in more than 900 fewer cars entering the Center each day. The majority of car pools were organized and implemented three weeks ago.

Other energy conservative measures have achieved the lowest December daily average consumption of natural gas and electricity in the last 5 years. These consumptions are based on the first 25 days of December. Compared to an average December, last month's energy usage indicates a 23 percent reduction in natural gas and a 17 percent reduction in electrical consumption. Comparing last

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DISCUSSING COMET—Professor Lubos Kohoutek, discoverer of Comet Kohoutek, is pictured in the MOCR holding a conversation with the Skylab 4 astronauts. The astronauts can be seen slightly on the screen in the right hand corner of the photo. Comet Kohoutek was the topic under discussion.

## Dr. Kohoutek Discusses Comet With SL-4 Crew

"You are the only people who are able to see Comet Kohoutek at this time, and your information is very valuable." Professor Lubos Kohoutek, discoverer of the "Comet of the Century" told astronauts Gerry Carr, Ed Gibson and Bill Pogue last Friday during the Comet's closest approach to the Sun.

Dr. Kohoutek, an astronomer from the Hamburg Observatory in Czechoslovakia, held a conversation with the orbiting crew from JSC's Mission Control Center. He said that it was "unbelievable that he could discuss the Comet with people so far away."

"It is a great pleasure for me to greet you as the first human beings studying a comet from

outer space. Your mission is indeed very important for astronomy," he told the crew.

Ed Gibson said the professor's early discovery of the Comet gave everyone a chance to "marshall forces, get organized, and go about observing the Comet in a systemic way."

"Everyone interested in Kohoutek is appreciative of your early discovery of the Comet," Gibson stated, "I think we'll learn a lot because you were able to pick it up so early."

Professor Kohoutek accidentally discovered the Comet while looking for asteroids last March, "I didn't know the Comet would reach such brightness and would receive such publicity," he said.

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## Space Pioneer to Leave NASA Soon

Dr. Charles A. Berry, NASA Director of Life Sciences and a flight surgeon who has been associated with the medical aspects of the manned space flight program since its beginning, will become President of the University of Texas Health Science Center in Houston on April 1, 1974.

The appointment, announced in Austin by Dr. Charles A. LeMaistre, Chancellor of the University of Texas System, is to a new position created to bring under the supervision of one administrator all the health oriented schools and services of the university, including the schools of medicine, dentistry, public health, biomedical sciences and research institutes.

In addition to monitoring and later supervising the monitoring of the condition and responses of astronauts to space flight in Mercury, Gemini, Apollo and Skylab, Dr. Berry was responsible for developing experimental programs to determine the effects of long-term space flight on man and his ability to function and work under stress and the weightless environment.

"This was a very difficult decision to make," Dr. Berry said. "Having been involved with the manned space flight

program since the beginning, it had become a very important part of my life. But, I could not turn down the challenge and



DR. CHARLES A. BERRY

responsibility offered to me by the University of Texas."

"I am extremely grateful that I will have an opportunity to serve through the Skylab program and complete analysis of the medical data from the third manned mission," he added.

Dr. James C. Fletcher, NASA Administrator, said he deeply regretted Dr. Berry's decision.

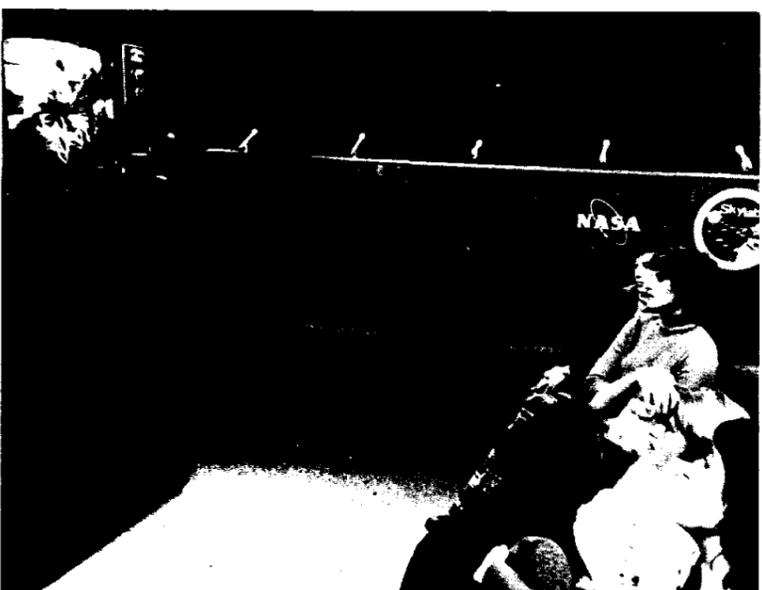
"His work in determining the ability of man to function and work in space for long periods of time is an important contribution to the future of the space program," said Dr. Fletcher. "The University of Texas is to be congratulated in obtaining

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IT'S SANTA!—Santa Claus paid a surprise visit to a party held during the Christmas holidays. Everyone at the party was delighted with his appearance.

## Skylab "Astromoths" May Lead to Better Pest Control



VIEWING ASTRONAUTS—The astronauts' show must have been pretty interesting since it captured the attention of so many people. In the first two photos, two of Ed Gibson's children, Joseph and Janet gaze intently at the TV monitor in the MOCR's viewing room, on Christmas Eve. The third photo shows Mrs. Pogue (far left), Mrs. Carr (far right) and other family members watching the television in the Building 1 conference room. Viewing the progress of the Christmas Day EVA are Cap Com Storey Musgrove and astronaut Russel Schweickart. They are looking at the display board in the MOCR.

Skylab IV is the scene of tests that may help relieve the Nation of an insect threat to its forests, according to the U.S. Department of Agriculture (USDA) and the National Aeronautics and Space Administration (NASA).

Gypsy moth eggs are starting to hatch in vials aboard Skylab IV, according to the astronauts. "We were excited, of course, to hear the astronauts' report," says Dr. Dora K. Hayes, chemist with USDA's Agricultural Research Service, Beltsville, Maryland. "So far, the count is about seven out of the 500 wild eggs that are aboard. Nothing has happened with 500 laboratory reared eggs on the space station. We will have to wait to see if more hatch. If the number hits something like 10 to 20 percent—then we'll know that we have a really neat breakthrough. It means that zero gravity could possibly be used to end the long hibernation period the moths normally require," said Dr. Hayes.

Dr. Hayes, working with two other ARS scientists—Milton S. Schechter, chemist, and William N. Sullivan, entomologist—wants to find ways to shorten the time period (about one year to rear a single generation of gypsy moths) so that the insects can be used in the sterilization method to eliminate future generations of the pests.

Gypsy moths defoliated 1½ to 2 million acres of forest annually for the past three years in the Northeast, and are spreading south and west. The sterile-male technique could be an important means of controlling this destruction. In this method, the insects are reared in large numbers in the laboratory and then are sterilized and released in areas infested by native gypsy moths.

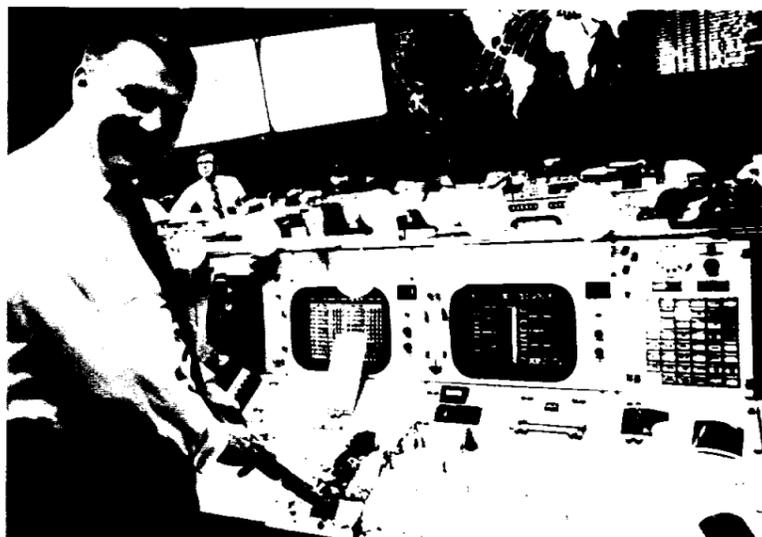
Because adult moths do not eat, there is no threat to forests by releasing sterilized moths. Matings of sterilized males and normal females produce infertile eggs. Enough sterilized males must be released to vastly outnumber the normal males, thus preventing most of the normal female-normal male matings.

Scientists have found it difficult to test this principle because gypsy moth eggs remain in a state of hibernation (called diapause) for nearly 6 months before hatching. Earlier laboratory experiments to break this diapause period have been un-

successful.

"Exposure to zero gravity for a sustained period of time offered potential for breaking diapause, and could be tested only in a space flight such as Skylab IV," according to Mr. Schechter. He, Dr. Hayes, Mr. Sullivan, Mr. Thomas McIntyre, APHIS, and Dr. Dennis Morrison, NASA coordinator of the project, got the idea of testing zero gravity on gypsy moths from intriguing results obtained with plants by other scientists on earlier biosatellite missions. Zero gravity produced unusual changes in the cells of germinating plants in those tests.

The scientists theorized that hormones in the gypsy moths' eggs might be liberated if similar changes occurred in the insects' cells as a result of zero gravity. The hormones may terminate diapause and cause the eggs to hatch early. This now may be happening aboard Skylab IV, but the scientists want to see if more eggs hatch before they are ready to say the experiment is successful.



CELEBRATES BIRTHDAY—Skylab Program Director William Schneider celebrated his birthday in the MOCR. He is shown cutting a cake which states "Happy Birthday Bill."

## Dr. Kohoutek—

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Bill Pogue summarized the activities of Kohoutek since the crew first spotted it, "We started making observations of the Comet the first week in December. We were able to find it by using binoculars. After that, it became brighter and brighter. We started monitoring it objectively from day to day. It didn't seem to change for about 19 days, then there was a very dramatic increase in the brightening."

Professor Kohoutek explained that data gathered by the astronauts during perihelion (closest approach to the Sun) was critical because the composition of the Comet's material was being recorded as it loosened.

"The final results of perihelion can be reached only when the astronauts come back," the astronomer emphasized. "They have photographic material on-board the space station."

The Comet last Friday could not be seen from Earth because of its proximity to the Sun. It was, however, recorded on television by the crew.

During the past week the astronauts reported that the Comet is brighter and that its tail has increased considerably.

Dr. Kohoutek said the best time to view the Comet from Earth will be January 10-12.

## Energy Conservation (Continued From Page 1)

month's energy usage to the lowest December consumption which was in 1969, a 16 percent reduction is seen for gas and electrical usage is running 14 percent lower.

The natural gas savings are the result of setting thermostats lower and reducing the hours that heating and air conditioning are supplied. The Central Heating and Cooling Plant which furnishes heat and air conditioning for the more than 100 buildings at JSC has been operating at a sizeable reduction, utilizing only three of its 5 boilers and 7 chillers during

peak work periods. At night and on week-ends, only two of the boilers and chillers are used. Chillers are utilized to provide cool air to the sophisticated computers and other electronic gear in support of the manned spaceflight program.

In addition to the reduction in use of natural gas, the energy management at the Center has resulted in an overall 17 percent reduction in electrical power usage.

Due to the Holiday Season, no Swap Shop was printed in this issue.

# ROUNDUP

NASA LYNDON B. JOHNSON SPACE CENTER

HOUSTON, TEXAS



The Roundup is an official publication of the National Aeronautics and Space Administration Lyndon B. Johnson Space Center, Houston, Texas, and is published every other Friday by the Public Affairs Office for JSC employees.  
Editor: Janet Wrather      Photographer: A. "Pat" Patnesky

# Heat Substitutes Bring Tragedy to Families

*A cast iron stove brought into a home for supplementary heating was placed directly on a wood floor. The stove ignited, causing extensive damage to the house. Escaping fumes from gasoline stored in a garage as a hedge against rationing were accidentally ignited by a cigarette, resulting in a fire which destroyed the garage and the car it housed...Charcoal which was burning in a living room for heat in a large brazier intended for outdoor cooking, released carbon monoxide, killing an entire family of six.*

Such tragedies have in the last several weeks come to the attention of the National Fire Protection Association. (NFPA)

"In trying to take the chill off the house—while our usual sources of heating fuel are in short supply, many families are resorting to supplements or substitutes with which they are not familiar," explained Charles Morgan, head of the international center of fire safety information. "Lack of knowledge and experience concerning installation and operation of stoves and heaters burning coal, wood or kerosene already has brought disaster to several families."

The fire prevention authority has offered the following guidelines to guard against fires.

—Follow local regulations pertaining to portable heaters. Where allowed, install and use them according to the manufacturer's instructions. If the original directions are missing—as with second-hand or seldom-used devices—get professional guidance from the local fire department or building inspector's office.

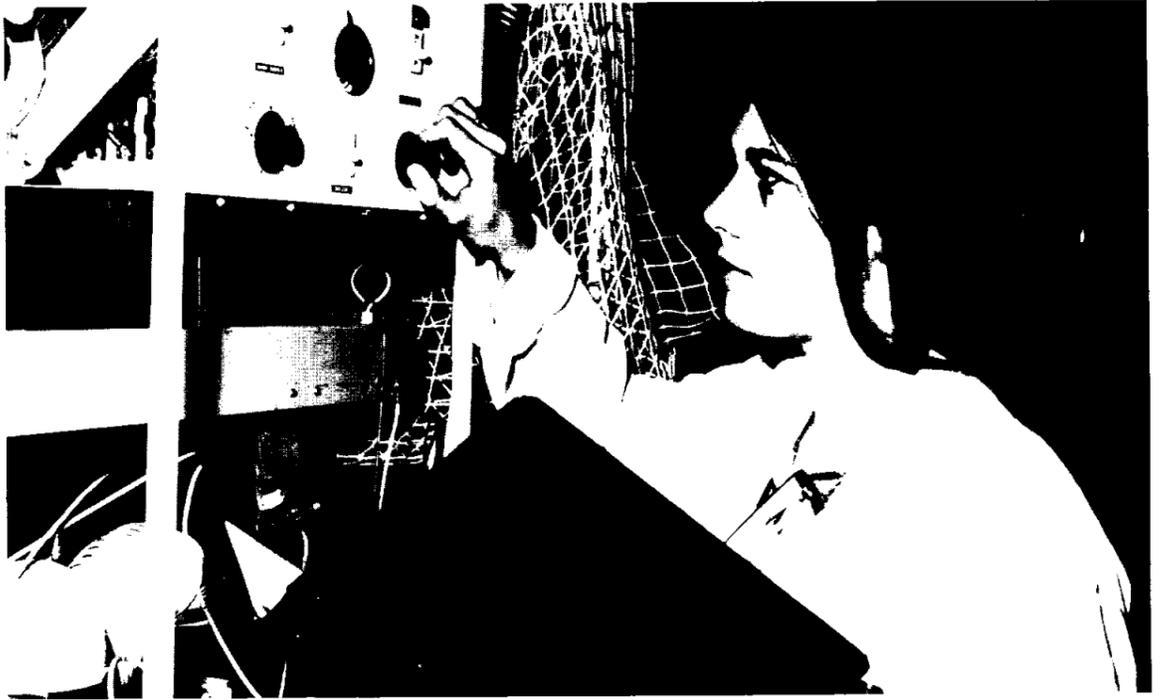
—Don't buy or use a portable heater which wobbles. With

stoves burning solid fuel—coal or wood—it's essential to learn how to start, fuel and tend the fire. Understand how to operate dampers and use them properly. Never pour combustible liquids into an already-heated stove to "freshen" the fire or as an aid to starting one. If the fireplace is used for warmth, place a metal mesh screen completely over the opening, keeping the draft open as long as a fire burns or smolders, and don't burn too much fuel at once.

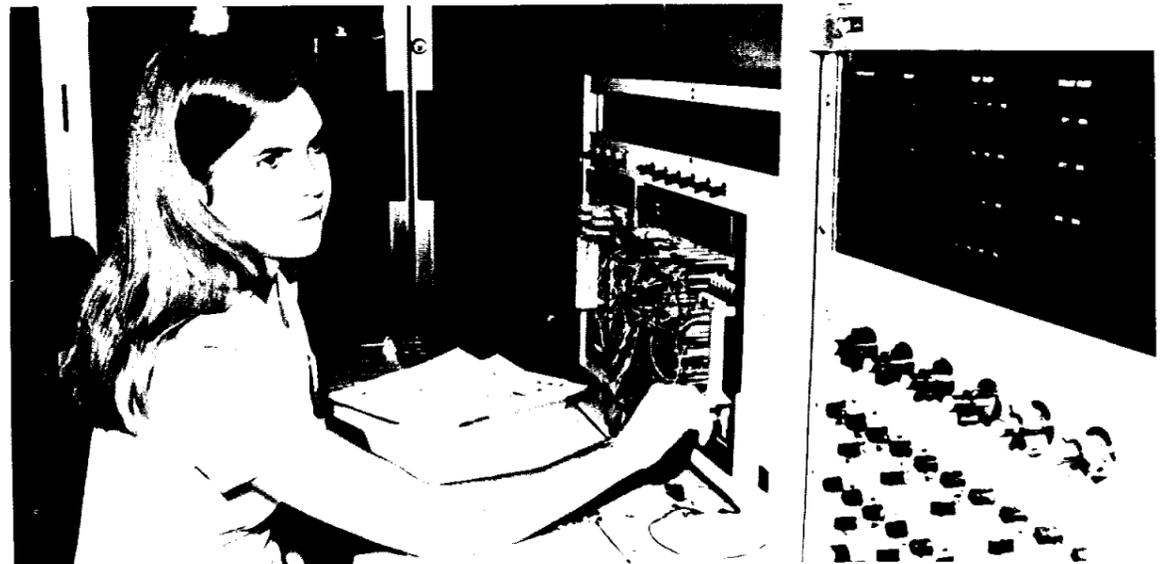
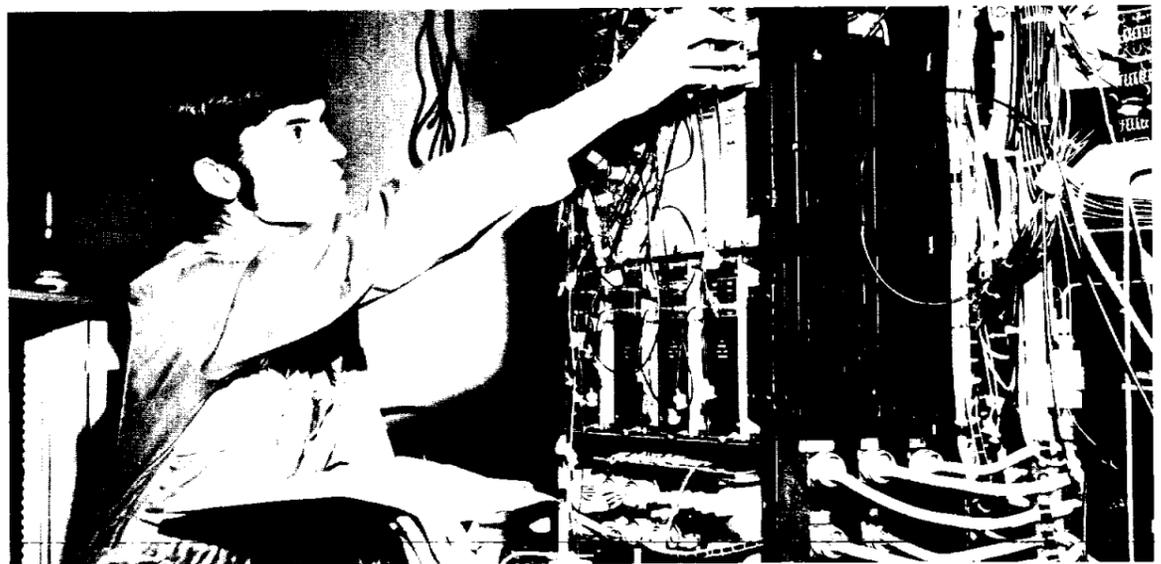
Place portable heaters well away from stairwells and from doorways where they could block escape in case of fire. Also, keep all heaters well away from materials which burn, such as draperies, upholstered furniture, towels, bedding, clothing. Don't let children play near heaters.

Ventilate the house enough to assure a continuous supply of fresh air. If a portable charcoal burner is used—such as a barbecue grille or hibachi—intended for outdoor cooking, it should be placed in the fireplace where the chimney will draw off the carbon monoxide. Otherwise, build-up of this harmful gas in the room could cause death by asphyxiation.

"Many local building codes prohibit use of room heaters and carefully regulate other heating devices," Morgan emphasized. "These codes have been developed for protection to the public. Don't risk your life and the lives of your loved ones by violating common sense or official regulations while trying to ward off winter's chills. Use sweaters instead of heating devices which might be hazardous, and save your family as well as your home from possible disaster."



NEW MEXICO STATE CO-OPS—Pictured above is Suzan Hagler, Co-op student from New Mexico State University. Susan is working in the crew Systems Division at JSC. Ross Campbell, below, is in the Planetary and Earth Sciences Division.



PURDUE CO-OPS—Janice Voss and Sharon LaFuse are Co-op students from Purdue University who are working at JSC. Janice, above, is pictured working on analog computer simulations. Her major is engineering science. Sharon, below, is a junior in Aeronautical-astronautical engineering. She is working on a program for Wang calculators in the area of environmental and thermal systems.

## New Answer to Old Space Question

A new answer to an old question, "What do we get from the billions of dollars spent in the space program?" will be considered in a film soon to be released by Philco-Ford.

The 22 minute film, "A Giant Step in Communications," credits the space program with developing new techniques and systems for communications, data processing and analysis, and automated responses to rapidly developing situations. These new technologies are now being applied to the management of complex problems on Earth, involving transportation, the environment and the energy crisis.

The film tells the story of dedicated but virtually unrecognized ground-support personnel and the communications and control technologies they have perfected to protect astronauts in space and wring maximum

scientific value from each mission.

The movie outlines a direction in which man's capabilities have been expanded—an area in which our nation has a new competence that might not have come for many years, and perhaps not at all, without the space program.

Featured in the movie is an interview with Skylab 4 astronaut Edward Gibson who discusses the space/ground teamwork that put the crippled Skylab spacecraft back in working condition.

Prints of the 16 mm color film, "A Giant Step in Communications" are available without charge to service organizations, schools and other community groups. They may be obtained by writing Industrial Relations Dept., Philco-Ford Corporation, 1002 Gemini Ave., Houston, 77058.



# JSC Establishes Shuttle Avionic Integration Lab

The Space Shuttle Program is committed to the development and successful repeated flights of a complex combination of systems. These systems require the use of similarly complicated avionics systems, subsystems and components.

To provide proper test and evaluation of these systems, the Shuttle Avionic Integration Laboratory (SAIL) is currently being established at JSC.

The SAIL will provide a central facility where avionics and related hardware (or simulation of this hardware), flight software, flight procedures and associated ground equipment can be fully integrated.

The SAIL will accept avionic systems test articles of production configuration, and establish these test articles in the physical and electrical configuration of

the flight systems including special location, true cabling and wiring and the like.

Tests of these systems will range from basic non-redundant integration tests to total system

testing including redundancy and mission operations. They will be accomplished through use of a primary electronic checkout and test system complemented with a complete sys-

tems simulation laboratory which will provide necessary vehicle flight dynamics simulation and external scenes.

The eventual combined test article, test laboratory and sim-

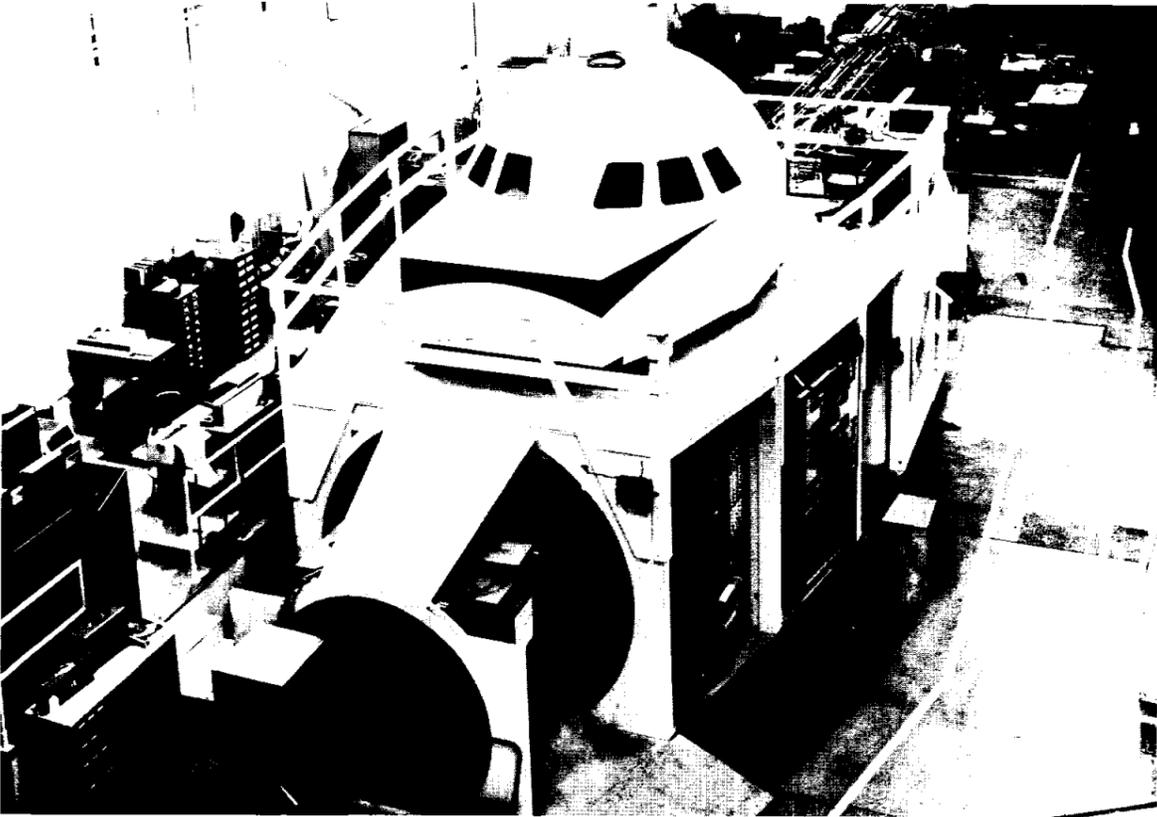
ulations laboratory complex will allow a functional "flight" of the avionics systems for verification and mission evaluation.

The projected scheduling of the SAIL is compatible with major Shuttle program system development test and operations milestones.

Emphasis is being placed on performance of complete testing of the combined avionics systems prior to the first flight of each flight vehicle configuration, including the initial horizon flight test program of the Shuttle Orbiter, and the vertical flight test program of the total Shuttle systems.

Avionics testing in the SAIL will provide required information regarding system operation prior to each major step in the Shuttle flight test and mission program.

The SAIL is being developed in Building 16 by JSC's Avionics Systems Engineering Division. W.C. Bradford is Division Chief. SAIL Manager is Donald Wiseman.



SAIL—The Shuttle Avionic Integration Laboratory (SAIL) currently being established at JSC will provide a central facility where avionics and related hardware (or simulation of this hardware), flight software, flight procedures and associated ground equipment can be fully integrated.

## Dr. Berry—

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the services of an outstanding medical researcher and administrator."

Dr. Berry, 50, began his work in aerospace medicine when he joined the Air Force in 1951 after three years of private practice in California. He rose to Chief of the Department of Aviation Medicine at the School of Aerospace Medicine and Chief of Flight Medicine in the Surgeon General's office.

As an Air Force flight surgeon, Dr. Berry participated in the medical evaluations leading to the selection of the original seven Mercury astronauts in 1958. He continued to work with NASA both in formulating medical monitoring programs and in monitoring the condition of astronauts during Project Mercury.

He was appointed Director for Life Sciences at NASA Headquarters in September 1971.

Dr. Berry has overall NASA responsibility for bringing together and managing all biomedical research, bio-environmental systems, aeronautical life sciences, bioengineering, planetary biology and quarantine programs, ecological applications, medical engineering applications and applications for medical and health-care delivery.



NIKON CAMERA—Flight Director Neil B. Hutchinson, 2nd from right, holds a 35mm camera while Astronaut Russell L. Schweickart, center, demonstrates its operation, in the MOCR at JSC. A camera like this one is being used to photograph the comet Kohoutek, as well as to record other data during the third manned Skylab mission.

## JSC Employees Receive Length of Service Awards

JSC Director Christopher C. Kraft recently presented Length of Service Awards to a number of JSC employees.

Receiving an award for 35 years of federal service was Armistead Dennett of the Apollo Spacecraft Program Office.

Thirty-year Length of Service Awards were presented to Maxime A. Faget, Lavern J. Nado, and Harle L. Vogel of Engineering and Development; Roscoe Breeler, Edna H. Carroll, Dave W. Corbett, Paul H. Kloetzer and Alfred J. Lancki; of Center Operations; Rebecca Beerman and Lawrence J. Perroni, Sr. of Safety, Reliability & Quality Assurance.

Employees receiving 25-year awards include James I. Brownlee of Administration and Program Support; Stanley Faber and Paul A. Folwell II of Flight Crew Operations; John M. Hawk of Life Sciences; Angeline S. Duke of Engineering and Development; Arthur C. Chapman,

Harold J. Ferrese, William L. Gill and Dorothy B. Lee of Engineering and Development; Walter C. Brewer, Lucy M. Cruz and John H. Quibodeaux of Center Operations; Robert B. Merrifield of the Shuttle Program Office; William L. Baldwin, Arnold W. Matties, Philip C. Moran

and Jack A. Ramsey of Safety, Reliability and Quality Assurance.

Twenty-five-year Length of Service Awards also went to Martin L. Miller of Science and Applications and William B. Karpf of the Program Operations Office.

## Junior Co-ops Return to Center

Junior Co-op Coordinator Shirley K. Price recently reported that 17 of the 20 Junior Co-op students hired by JSC this summer returned to work during the Christmas holidays and semester break.

"All of these students received outstanding evaluations and their supervisors eagerly awaited their return," Shirley related, "These young people were a great asset to the Center and we are looking forward to more like them this summer."

The Junior Co-op Program is one of JSC's "stay-in-school" programs designed for graduating high school seniors. It provides financial assistance and junior engineering, scientific or administrative work experience during the summer before students enter college. Although the program is generally in effect from June to September, it can be extended or shortened in individual cases.

Previously called the Junior Student Trainee Pre-Co-op Program, the program was initiated as part of the Minority Manpower Study in 1965.

The program was supported

by JSC, Dupont, Dow, Shell Oil, Humble Oil and General foods and was administered by Dr. B. A. Turner of Texas Southern University. Recently, however, because of budget limitations, the recruiting and placing of JSC Junior Co-op trainees became the responsibility of the Center's Employee Development Branch.

Buy U. S. Savings Bonds



JUNIOR CO-OPS—Pictured above are the Junior Co-op students who worked last summer at the Center. Seventeen of the students worked at JSC during the Christmas holidays.

## Message—

(Continued From Page 1)

told Cap Com Hank Hartsfield that if they noticed a momentum change in the spacecraft, it was because "all three guys were clamoring up into the command module to see what was stowed in the lockers."

Carr received a handcrafted metal symbol of a FISH (Christian symbol). It was crafted by Jerry Avery of Kerrville, Texas.

Gibson's gift was a tie tack with oriental writing ("LOVE"). Mrs. Pogue's present to her husband was a tie tack with the Skylab III emblem on it.

The crew did not have the usual Christmas meal, however, fruitcake was on the menu.



Take  
stock  
in America.